NASA

FINAL TECHNICAL REPORT FOR NAG5-7846

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Title of Research: **Consolidating the Cygnus Region 1.809 MeV Emission**

Report Period: 1 December 1998 – 31 May 2000

October 2000

Final Technical Report for NASA Grant NAG5-7846 Consolidating the Cygnus Region 1.809 MeV Data

Uwe Oberlack
October 18, 2000

The analysis of additional Cygnus observations together with a further improved background model resulted in an update of the 1.809 MeV allsky-map, as presented at the 5th Compton Symposium (Plüschke et al. 2000a). Along with improvements of the data, the Cygnus region has been studied in greater detail and compared to a model of non-stationary nucleosynthesis following the evolution of young OB associations. This model, started by Oberlack (1997), has been vastly extended to include additional observables such as dynamics of the ISM, following the evolution of superbubbles, and the emission of ionizing ultraviolet light. A report on this work has been given in (Plüschke et al. 2000b). The rich OB associations Cygnus OB 1 and OB 2 could indeed account for a large fraction of the "Cygnus West" emission. Emission from "Cygnus East" however, cannot easily be modelled by the sparse Cygnus OB 7 association. This led to a study on the impact of a newly proposed ^{26}Al source, massive close binaries. It is found that a very significant ^{26}Al contribution from massive close binaries would be needed to account for the observed emission in Cygnus East, which would single out this region from other observations. It appears more likely that deeper observations (e.g., in the near infrared) are needed to get a better estimate on the population of massive stars in Cygnus East.

References

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